WHAT IS CLAIMED IS:

1. A process for producing an inorganic oxide that contains micro- and mesopores, comprising:

heating a mixture comprising water, an inorganic oxide and at least one compound that binds to the inorganic oxide by hydrogen bonding, said heating being to a temperature and for a time to produce an inorganic oxide that contains both micropores and mesopores.

2. The process of Claim 1 wherein said compound is a triethanolamine, sulfolane, tetraethylenepentamine, diethylglycoldi-benzonate or a glycol.

3. The process of Claim 1, wherein the mixture further includes a micropore forming agent.

4. The process of Claim 3 wherein said micropore forming agent is a quaternary ammonium salt.

5. The process of Claim 3 wherein the inorganic oxide is an amorphous silicate.

6. The process of Claim 5 wherein said compound is a glycol.

7. The process of Claim 5 wherein the glycol has a boiling point of at least 150°C.

8. The process of Claim 5 wherein the heating includes maintaining the mixture at about the boiling point of water to evaporate water and volatile organics from the inorganic oxide precursor therefrom, followed by calcining at a temperature of above 300°C.

12 9. The process of Claim 1 wherein the inorganic material is a silicate material selected from the group consisting of tetraethyl orthosilicate, fumed silica, sodium silicate and silica sol.

9 10. The process of Claim 7 wherein the glycol is selected from the group consisting of glycerol, diethylene glycol, triethylene glycol and tetraethylene glycol.

10 11. The process of Claim 10 wherein the mixture additionally contains a source of ions selected from the group of IVA, VB, VIB, VIIB, VIII, IB, IIB and IIIA elements .

11 12. The process of Claim 10 wherein the mixture additionally contains a source of aluminium ions.

13 13. The process of Claim 1 wherein the inorganic oxide comprises alumina.

No 14. The process of Claim 1 wherein the mixture further includes a crystalline zeolite in finely divided form.

NO 15. The process of Claim 14 wherein the average particle size of the zeolite is from 5 to 1500 nanometers.

16. A product comprising:

an inorganic oxide, said amorphous inorganic oxide including mesopores and micropores, said micropores being present in an amount of from 3% to 60%, by pore volume, based on micropores and mesopores.

17. The product of Claim 16 wherein the BET surface area is from 50 to 1250 m^2/g.

18. The product of Claim 16 wherein the combined micro- and mesopore volume is from 0.3 to 2.2 ml/g.

19. The product of Claim 16 wherein the pore size distribution of the mesopores produces a pore size distribution plot in which the ratio of the width of the plot at half the height of the plot to the pore size at the maximum height of the plot is no greater than 0.75.

20. The product of Claim 16 wherein a pore size distribution plot of mesopores and micropores includes distinct mesopore and micropore peaks.

21. The product of Claim 16 wherein at least a portion of the micropores have a crystalline structure.

22. The product of Claim 19 wherein at least a portion of the micropores have a crystalline structure.

23. A process for producing an inorganic oxide that contains mesopores and less than 3 volume percent micropores, comprising:

heating a mixture comprising water, an inorganic oxide and at least one compound that binds to the inorganic oxide by hydrogen bonding, said heating being to a temperature and for a time to produce an inorganic oxide that contains both micropores and mesopores, and hydrothermally heating said inorganic oxide to reduce the micropores to less than 3 percent by pore volume of mesopores and micropores.

24. A process for producing an inorganic oxide that contains micropores and less than three volume percent mesopores, comprising:

heating a mixture comprising water, an inorganic oxide and at least one compound that binds to the inorganic oxide by hydrogen bonding, said heating being to a temperature below the temperature at which there is substantial formation of mesopores, and removing said compound at a temperature below the temperature at which there is substantial formation of

mesopores to produce an inorganic oxide that contains micropores and mesopores.